Complete Summary

GUIDELINE TITLE

ACR Appropriateness Criteria™ for pre-irradiation evaluation and management of brain metastasis.

BIBLIOGRAPHIC SOURCE(S)

Gaspar LE, Gutin PH, Rogers L, Schneider JF, Larson D, Bloomer WD, Buckley JA, Gibbs FA, Lewin AA, Loeffler JS, Malcolm AW, Mendenhall WM, Schupak KD, Shaw EG, Simpson JR, Wharam MD Jr, Leibel S. Pre-irradiation evaluation and management of brain metastases. American College of Radiology. ACR Appropriateness Criteria. Radiology 2000 Jun;215(Suppl):1105-10. [25 references]

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SCOPE

DISEASE/CONDITION(S)

Brain metastases

GUIDELINE CATEGORY

Evaluation
Management

CLINICAL SPECIALTY

Neurology
Oncology
Radiation Oncology
Radiology

INTENDED USERS

Health Plans
Hospitals
Managed Care Organizations
Physicians
Utilization Management

GUIDELINE OBJECTIVE(S)

To evaluate the appropriateness of radiologic examinations and treatment procedures for pre-irradiation evaluation and management of brain metastases.

TARGET POPULATION

Patients with brain metastases

INTERVENTIONS AND PRACTICES CONSIDERED

1. Magnetic resonance imaging of brain with standard-dose contrast
2. Computed tomography of brain with contrast
3. Magnetic resonance imaging of brain with high-dose contrast
4. Resection (craniotomy)
5. Biopsy only of suspicious intracranial lesion
6. Corticosteroids, 4 mg/day
7. Corticosteroids, 16 mg/day
8. Anticonvulsants (prophylactic)

MAJOR OUTCOMES CONSIDERED

- Utility of radiologic examinations in pre-irradiation evaluation and management of brain metastases
- Morbidity and mortality associated with brain metastases
- Improved care

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

The guideline developer performed literature searches of recent peer-reviewed medical journals, primarily using the National Library of Medicine's MEDLINE database. The developer identified and collected the major applicable articles.

NUMBER OF SOURCE DOCUMENTS

The total number of source documents identified as the result of the literature search is not known.

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Expert Consensus (Delphi Method)
Weighting According to a Rating Scheme (Scheme Not Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Not applicable

METHODS USED TO ANALYZE THE EVIDENCE

Systematic Review with Evidence Tables

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

One or two topic leaders within a panel assume the responsibility of developing an evidence table for each clinical condition, based on analysis of the current literature. These tables serve as a basis for developing a narrative specific to each clinical condition.

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus (Delphi)

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

Since data available from existing scientific studies are usually insufficient for meta-analysis, broad-based consensus techniques are needed to reach agreement in the formulation of the Appropriateness Criteria. Serial surveys are conducted by distributing questionnaires to consolidate expert opinions within each panel. These questionnaires are distributed to the participants along with the evidence table and narrative as developed by the topic leader(s). Questionnaires are completed by the participants in their own professional setting without influence of the other members. Voting is conducted using a scoring system from 1-9, indicating the least to the most appropriate imaging examination or therapeutic procedure. The survey results are collected, tabulated in anonymous fashion, and redistributed after each round. A maximum of three rounds is conducted and opinions are unified to the highest degree possible. Eighty (80) percent agreement is considered a consensus. If consensus cannot be reached by this method, the panel is convened and group consensus techniques are utilized. The strengths and weaknesses of each test or procedure are discussed and consensus reached whenever possible.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Criteria developed by the Expert Panels are reviewed by the American College of Radiology (ACR) Committee on Appropriateness Criteria and the Chair of the ACR Board of Chancellors.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

ACR Appropriateness Criteria™

Clinical Condition: Pre-Irradiation Evaluation and Management of Brain Metastases

Variant 1: 50-year-old patient with newly diagnosed cancer of any stage and new intracranial signs or symptoms.

Treatment	Appropriateness Rating	Comments
Magnetic resonance imaging of brain with standard-dose contrast	8	
Computed tomography of brain with contrast	7	
Magnetic resonance imaging of brain with high-dose contrast	3	
Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9 1=Least appropriate 9=Most appropriate		

Variant 2: 50-year-old man with no known diagnosis of cancer, but with computed tomography scan evidence of solitary metastasis.

Treatment	Appropriateness Rating	Comments
Magnetic resonance imaging of brain with standard-dose contrast	8	
Magnetic resonance imaging of brain with high-dose contrast	8	
Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9 1=Least appropriate 9=Most appropriate		

Variant 3: 50-year-old patient with newly diagnosed non-small cell lung cancer with resectable primary and computed tomography scan evidence of solitary brain metastasis.

Treatment	Appropriateness Rating	Comments
Magnetic resonance imaging of brain with standard-dose contrast	8	
Magnetic resonance imaging of brain with high-dose contrast	8	
Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9 1=Least appropriate 9=Most appropriate		

Variant 4: 50-year-old patient with no known diagnosis of cancer, magnetic resonance imaging consistent with solitary metastasis in anterior left frontal lobe, minor neurologic symptoms, and work up of chest and abdomen negative.

Treatment	Appropriateness Rating	Comments
Resection (craniotomy)	9	
Biopsy only of suspicious intracranial lesion	2	

Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9 1=Least appropriate 9=Most appropriate

Variant 5: 50-year-old patient with melanoma and brain metastases, mild edema on imaging, no hydrocephalus, mild neurologic symptoms present, and no history of seizures.

Treatment	Appropriateness Rating	Comments
Corticosteroids, 4 mg/day	8	
Corticosteroids, 16 mg/day	5	
Anticonvulsants (prophylactic)	4	
Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9 1=Least appropriate 9=Most appropriate		

Variant 6: 50-year-old patient with non-small cell lung cancer and brain metastases, mild edema on imaging, no hydrocephalus, mild neurologic symptoms, and no history of seizures.

Treatment	Appropriateness Rating	Comments
Corticosteroids, 4 mg/day	8	
Corticosteroids, 16 mg/day	5	
Anticonvulsants (prophylactic)	2	
Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9 1=Least appropriate 9=Most appropriate		

Summary

The pretreatment evaluation and management must address the need to correctly identify patients with brain metastases by available imaging techniques.

Subsequent treatment often depends on the number of metastases. High-dose contrast magnetic resonance imaging (MRI) is an excellent imaging technique, but its utility is controversial. Patients with hydrocephalus or impending brain herniation should be started on high doses of steroids and evaluated for possible neurosurgical intervention. Patients with mild symptoms should receive approximately 4 mg per day in divided doses; those with no neurologic symptoms do not need to be routinely started on steroids. There is no proven benefit of anticonvulsants in the patient who has not experienced seizures, although there may be exceptional subgroups of patients, such as those with melanoma, who may benefit.

CLINICAL ALGORITHM(S)

Algorithms were not developed from criteria guidelines.

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The recommendations are based on analysis of the current literature and expert panel consensus.

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Appropriate identification, and management of brain metastases

POTENTIAL HARMS

Toxicity from steroids

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

An American College of Radiology (ACR) Committee on Appropriateness Criteria and its expert panels have developed criteria for determining appropriate imaging examinations for diagnosis and treatment of specified medical condition(s). These criteria are intended to guide radiologists, radiation oncologists and referring physicians in making decisions regarding radiologic imaging and treatment. Generally, the complexity and severity of a patient's clinical condition should dictate the selection of appropriate imaging procedures or treatments. Only those exams generally used for evaluation of the patient's condition are ranked. Other imaging studies necessary to evaluate other co-existent diseases or other medical consequences of this condition are not considered in this document. The availability of equipment or personnel may influence the selection of appropriate imaging procedures or treatments. Imaging techniques classified as investigational by the U.S. Food and Drug Administration (FDA) have not been considered in developing these criteria; however, study of new equipment and

applications should be encouraged. The ultimate decision regarding the appropriateness of any specific radiologic examination or treatment must be made by the referring physician and radiologist in light of all the circumstances presented in an individual examination.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Living with Illness

IOM DOMAIN

Effectiveness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Gaspar LE, Gutin PH, Rogers L, Schneider JF, Larson D, Bloomer WD, Buckley JA, Gibbs FA, Lewin AA, Loeffler JS, Malcolm AW, Mendenhall WM, Schupak KD, Shaw EG, Simpson JR, Wharam MD Jr, Leibel S. Pre-irradiation evaluation and management of brain metastases. American College of Radiology. ACR Appropriateness Criteria. Radiology 2000 Jun;215(Suppl):1105-10. [25 references]

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

1999

GUIDELINE DEVELOPER(S)

American College of Radiology - Medical Specialty Society

SOURCE(S) OF FUNDING

The American College of Radiology (ACR) provided the funding and the resources for these ACR Appropriateness Criteria™

GUIDELINE COMMITTEE

ACR Appropriateness Criteria™ Committee, Expert Panel on Radiation Oncology-Brain Metastases Work Group.

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Names of Panel Members: Laurie E. Gaspar, MD; Phillip H. Gutin, MD; Lisa Rogers, DO; Joseph F. Schneider, MD; David Larson, MD, PhD; William D. Bloomer, MD; Judith A. Buckley, MD; Frederic A. Gibbs, MD; Alan A. Lewin, MD, Jay S. Loeffler, MD; Arnold W. Malcolm, MD; William M. Mendenhall, MD; Karen D. Schupak, MD; Edward G. Shaw, MD; Joseph R. Simpson, MD; Moody D. Wharam, Jr., MD; Steven Leibel, MD

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

GUIDELINE STATUS

This is the current release of the guideline.

The ACR Appropriateness Criteria™ are reviewed after five years, if not sooner, depending upon introduction of new and highly significant scientific evidence. The next review date for this topic is 2004.

GUIDELINE AVAILABILITY

Electronic copies: Available from the American College of Radiology (ACR) Web site.

Print copies: Available from ACR, 1891 Preston White Drive, Reston, VA 20191. Telephone: (703) 648-8900.

AVAILABILITY OF COMPANION DOCUMENTS

None available

PATIENT RESOURCES

None available

NGC STATUS

This summary was completed by ECRI on January 30, 2001. The information was verified by the guideline developer as of February 20, 2001.

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Date Modified: 11/15/2004